

WEB ENABLED WAITERS TRACKING SYSTEM
- A PROTOTYPE

SYED NOOR PERNAMA SYED IDRIS

UNIVERSITI UTARA MALAYSIA

2003

Web Enabled Waiters Tracking System - A Prototype

A project report submitted to the Graduate Faculty in partial fulfillment of
the requirement for the degree Master of Science (Information Technology)
Universiti Utara Malaysia

By

SYED NOOR PERNAMA SYED IDRIS



**Fakulti Teknologi Maklumat
(Faculty of Information Technology)
Universiti Utara Malaysia**

**PERAKUAN KERJA KERTAS PROJEK
(Certificate of Projek Paper)**

Saya, yang bertandatangan, memperakukan bahawa
(I, the undersigned, certify that)

SYED NOOR PERNAMA SYED IDRIS

calon untuk Ijazah
(candidate for the degree of) **MSc. INFORMATION TECHNOLOGY**

telah mengemukakan kertas projek yang bertajuk
(has presented his/her project paper of the following title)

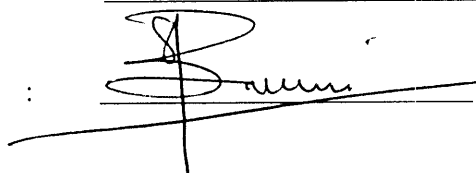
WEB-ENABLED WAITERS TRACKING SYSTEM - A PROTOTYPE

seperti yang tercatat di muka surat tajuk dan kulit kertas projek
(as it appears on the title page and front cover of project paper)

bahawa kertas projek tersebut boleh diterima dari segi bentuk serta kandungan
dan meliputi bidang ilmu dengan memuaskan.
(that the project paper acceptable in form and content, and that a satisfactory
knowledge of the filed is covered by the project paper).

Nama Penyelia Utama
(Name of Main Supervisor): **MUHAMMAD SHAHBANI ABU BAKAR**

Tandatangan
(Signature)

: 

Tarikh
(Date)

: 15 / 10 / 2003

PERMISSION TO USE

In presenting this thesis in partial fulfillment of the requirements for a post-graduate degree from Universiti Utara Malaysia, I agree that the Universiti Library may make it freely available for inspection. I further agree that permission for copying of this thesis in any manner, in whole or in part, for scholarly purposes may be granted by my supervisor or, in their absence, by the Dean of the Graduated Faculty. It is understood that any copying or publication or use of this thesis or parts thereof for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to Universiti Utara Malaysia for any scholarly use which may be made of any material from my thesis.

Requests for permission to copy or make other use of material in this thesis, in whole or in part, should be addressed to:

Dean of Graduated Faculty

Universiti Utara Malaysia

06010 Sintok

Kedah Darul Aman

ABSTRAK

Penanti merupakan pemohon perkhidmatan telefon yang didaftarkan sebagai penanti apabila perkhidmatan tidak dapat diberi atas sebab kekurangan kemudahan talian. Jejukan penanti merupakan salah satu elemen proses terpenting di dalam Telekom Malaysia. Sistem sediaada yang dikenali CASS (*Customer Automated Service System*) menyediakan beberapa kemudahan dalam penghapusan penanti dalam bentuk laporan penanti dan laporan kesesakan laluan talian. Walau bagaimana pun, laporan-laporan ini perlu diuruskan secara manual dan ianya tidak efektif dan tidak memenuhi visi dan misi Telekom Malaysia.

Projek ini bertujuan agar dapat menghasilkan satu sistem yang efektif dan efisien dalam menggantikan kaedah manual bagi penghapusan penanti. Web-enabled Tracking System, secara pastinya membantu zon negeri untuk menghapuskan penanti. Kaedah Rational Unified Process (RUP) adalah metodologi pembangunan software yang diguna-pakai. Prototaip ini dinilai berdasarkan soalan-kajian kepuasan pengguna untuk mendapatkan keputusan tentang fungsi-fungsi dan kebaikan sistem. Keputusan pembangunan dan penilaian projek, dan kepentingan kajian dibincangkan pada penghujung kertas kajian ini.

Kata Kunci: Penanti, CASS, Web-enabled, Waiters Tracking System.

ABSTRACT

Waiter, which is an applicant for telephone service is registered as a waiter when service cannot be provided owing to shortage of facilities. Waiters tracking are one of the vital elements in processes of Telekom Malaysia. The existing system, namely CASS (Customer Automated Service System) provides some tools for clearing waiters in the form of waiter reports and congested cable route report. However, these reports are managed manually, are not effective to fulfill the Telekom Malaysia mission and vision.

This project aims to deliver an efficient and effective system to replace the manual way of clearing waiters. This web-enabled system namely Waiters Tracking System should definitely assist the state zone to clear waiters. The software development methodology used to develop this prototype is the Rational Unified Process (RUP) approach. This prototype was evaluated using User Interface Satisfaction Questionnaire to discover its functionality and usefulness. The results of the project development and project evaluation, and contribution of knowledge are described at the end of paper.

Key Words: Waiter, CASS, Web-enabled, Waiters Tracking System.

ACKNOWLEDGEMENTS

This work would not have been possible without the guidance of my supervisor, Mr. Muhamad Shahbani Abu Bakar. His profound understanding of software engineering and human nature makes him a unique supervisor that will be the standard to which I will always strive. He gave me the freedom and means to mature my ideas with his broad knowledge and research efforts. To Mr. Muhamad Shahbani, my deepest gratitude.

I must also acknowledge fellow friends in the School of IT, UUM Sintok: Zainal Abidin Sharif Ghazali, Tajuddin Ramli and Anuar Mat Safar. They contributed to many interesting discussions.

My determination in getting a Master's degree in the Universiti Utara Malaysia is due, in part, to the challenge of being part of my dynamic and outgoing family. I thank my mother, wife, brother and sister for their always being there for me.

The two and a half years of the Master program were not only rich in technical learning, but also crucial for my personal growth. The isolation from everything and everyone I knew in Telekom Malaysia threw me into tough times of struggling to adapt to the new environment. I might not have completed my study if it was not for the friends in Telekom Malaysia I made along the way: Othman Mat and Goh Khuan Guan. I give my special thanks to my wife Nor Azlina Mat Sariff for his support in all possible ways.

Syed Noor Pernama Syed Idris

TABLE OF CONTENTS

	Page
PERMISSION TO USE	i
ABSTRAK.....	ii
ABSTRACT	iii
ACKNOWLEDGEMENTS	iv
TABLE OF CONTENTS	v
LIST OF FIGURES.....	vii
LIST OF TABLES.....	viii
Chapter 1.....	1
INTRODUCTION	1
1.1 Waiters in Telekom Malaysia.....	2
1.1.1 Guidelines for Waiter Clearance	2
1.1.1.1 Unserved Area Waiters.....	3
1.1.1.2 Served Area Waiters	3
1.2 Problem Statements.....	4
1.3 The Objectives	5
1.4 Project Scope and Boundaries.....	6
Chapter 2.....	8
LITERATURE REVIEW	8
2.1 Waiter and Demand	8
2.2 Customer and Waiter Satisfaction Survey	10
2.3 Waiters Administration Under CASS	12
2.4 Web-enabled	14
2.5 Web Application Architecture	15
Chapter 3.....	19
THE METHODOLOGY.....	19
3.1 Rational Unified Process	19
3.1.1 Rational Unified Process (RUP) Phase	21
3.1.2 Process Workflows.....	24
3.1.3 Modeling with the UML	25
3.1.4 System Specification	28

3.2 Using Questionnaire	31
3.2.1 Measuring Satisfaction	32
3.2.1.1 Sample	33
3.2.1.2 Measurement	33
3.2.1.3 The Questions	34
Chapter 4	35
FINDINGS	35
4.1 System Requirements Analysis	35
4.1.1 Use Case Diagram for the Waiters Tracking System	35
4.1.1.1 Actors Identification	37
4.1.1.2 Explanation of Use Cases	39
4.1.2 Class Diagram	40
4.1.3 Activity Diagram	42
4.1.4 Sequence Diagram	47
4.2 Supplementary Specification	54
4.2.1 Functionality	54
4.2.1.1 Logging and Error Handling	54
4.2.1.2 Security	54
4.2.2 Usability	55
4.2.2.1 Human Factors	55
4.3 User Interface Prototype	56
4.4 Testing	62
4.5 User Interface Evaluation with Questionnaires	63
Chapter 5	65
CONCLUSION	65
5.1 Web-enabled System Development	65
5.2 Advantages of the Web-enabled	66
5.3 Problems and Limitations	67
5.4 Recommendation of the Project	67
5.5 Summary	68
REFERENCES	69
APPENDIXES	72

LIST OF FIGURES

	Page
Figure 2.1: Waiter Administration Process Overview.....	13
Figure 2.2: Basic Web Application Architecture	15
Figure 2.3: Dynamic Web Site Architecture	16
Figure 3.1: Rational Unified Process Overview.....	23
Figure 3.2: Rational Unified Process Project Life Cycle.	23
Figure 3.3: System Environment.....	30
Figure 3.4: Dependencies among subsystems	31
Figure 4.1: Waiters Tracking System Use Case	36
Figure 4.2: Class Diagram for Waiters Tracking System.....	41
Figure 4.3: Activity Diagram for Waiters Tagging Update.....	42
Figure 4.4: Activity Diagram for Search Waiters Information	43
Figure 4.5: Activity Diagram for User ID and Password Validation	43
Figure 4.6: Activity Diagram for Cancel or Clear waiters.	44
Figure 4.7: Activity Diagram for Cancel Waiters Report.	45
Figure 4.8: Activity diagram for request user ID	46
Figure 4.9: Sequence diagram for searching waiters' information by exchange code	47
Figure 4.10: Sequence diagram for searching waiters' information by name.	48
Figure 4.11: Sequence diagram for searching waiters' information by order number.	49
Figure 4.12: Sequence diagram for updating waiters tagging	50
Figure 4.13: Sequence diagram for clearing and canceling waiters	51
Figure 4.14: Sequence diagram for canceled waiters listing	52
Figure 4.15: Sequence diagram for password validation	53
Figure 4.16: Sequence diagram for ID and password request.....	53
Figure 4.17: Main Page of Waiters Tracking System	57
Figure 4.18: Login page	58
Figure 4.19: Searching waiters by exchange	59
Figure 4.20: Searching a waiter by name	59
Figure 4.21: Updating waiters' information and tagging Skim ID page	60
Figure 4.22: Clearing & canceling a waiter page	61
Figure 4.23: Generating canceled waiters page.....	61
Figure 4.24: Generating report page.....	62

LIST OF TABLES

	Page
Table 4.1: Waiters Tracking System Event Analysis	38
Table 4.2: Validation testing	63
Table 4.3: Mean user response for each questionnaire section	64

Chapter 1

INTRODUCTION

A Web-enabled system consists of an Internet-connected group of computers that support the retrieval of information and the implementation of services, usually in support of a business or a commerce venture. The Internet was designed to transmit raw text data (encoded in a markup language called HTML) because of the varying operating system environments in which the data may be viewed. The benefits of web-enabled host sessions are tremendous. In fact, studies have shown that investments in technology increase employee satisfaction, and in turn, customer satisfaction while increasing revenue and lowering expenses (Conallen, 1999). A browser (a computer software application) is then designed and built in each operating system to interpret and present the text information for browsing. Waiters Tracking System Web-enabled system involves the use of interactive technology by users and management to obtain information. It conducts transactions, and essentially "shortcut" processes that previously required multiple steps, paperwork, the involvement of waiters tracking, and all the delay processes. Using secure corporate intranets that limit users' ability to change or initiate data-while providing unprecedented self-sufficiency, immediatly, and information access.

The contents of
the thesis is for
internal user
only

REFERENCES

- Bevan N. (1998). *Usability Issues in Web Site Design, Version 3*. Retrieve from <http://www.npl.co.uk/npl/sections/us>
- Bob Matgolin (1997). *Smarter Stuff, Byte Magazine*. Retrieve from <http://www.byte.com/art/9706/sec6/art2.htm>
- Boggs, W, & Boggs, M. (1999). *Mastering UML with Rational Rose*, London: SYBEX.
- Chin, J.P., Diehl, V.A., Norman, K.L. (1998). *Development of an Instrument Measuring User Satisfaction of Human-Computer Interface*. Retrieve from <http://www.acm.org/perlman/question>.
- Conallen, J. (1999). *Modeling Web Application with UML*. Retrieve from http://www.rational.com/worldwide/27662_webapps.pdf.
- Connolly, Thomas M., Begg, Carolyn E. (1999). *Database System: A practical approach to design, implementation, and management*. 2nd Edition. Addison Wesley
- Foley, A. & Regan, B. (2002). *Web Design for Accessibility: Policies and Practice*. *Educational Technology Review*, 10(1). Retrieve from <http://www.ericit.org/fulltext/IR546212.pdf>
- Grady Booch, James Rumbaugh, and Ivar Jacobson (1999). *The Unified Modeling Language User Guide*. Addison-Wesley.

- Larman, C. (2002). *Applying UML and Patterns: An Introduction to object-oriented analysis and design and the unified process (Second Edition)*. Philippe Kruchten: Prentice Hall PTR.
- MacDougall, G., Place, C., & Currie, D. (1998, June). *Web-based testing: A form-based template for creating multimedia enhanced tests*. Paper presented at the 1998 World Conference on Educational Multimedia and Hypermedia and World Conference on Educational Telecommunications, Freiburg, Germany. (ERIC Document Reproduction No. ED428692)
- Malaysia Communication and Multimedia Commission (2002). *Consumer Satisfaction Survey Wave-IV*. Retrieve from <http://www.mcmc.gov.my/mcmc/consumer/CSS-IV.pdf>
- Magnus Penker and Hans-Erik Eriksson (2000). *Business Modeling with UML: Business Patterns at Work*. John Wiley and Sons, 2000.
- Martin, L. (1996). *Succeeding with the Booch and OMT methods: A practical approach*. Addison-Wesley Publishing Company.
- Nielsen J. (2000). *Test With Five Users, Alertbox*, Retrieve from <http://www.useit.com/alertbox/20000319.html>
- Rumbaugh, J. et. al. (1991). *Object Oriented Modeling and Design*. New Jersey: Prentice Hall.
- Rational Software Corporation (2001). *Business Modeling with the UML*. Retrieve from <http://www.rational.com/worldwide>

- Simeon, R. (1999). *Evaluating domestic and international Web-site strategies*.
Internet Research, 9 (4), 297 –308. Retrieve from
<http://mustafa.emeraldinsight.com/vl=23012377/cl=20/nw=1/fm=html/rpsv/cw/mcb/10662243/v9n4/s5/p297>
- Telekom Malaysia Berhad Resource Center (2000). *Cass Practice and Procedure*.
Retrieve from <http://www.intra.tm/CASS/index.html>.
- Telecommunications and Informatics Division Industry and Energy Department (1995).
Performance Indicator for the Telecommunications Sector. Retrieve from
<http://www.worldbank.org/html/opr/pmi/telecom/teleco00.html>
- Waienewright, P. (2002). *Web Service Infrastructure - The global utility for real-time business*. Retrieve from <http://www.philwaienewright.com/WSIpaper1-1.pdf>